

REMARKS

Claims 1-21 are pending in the above-identified application. In the September 19 Office Action, the Examiner objected to Claim 3 for an informality. The Examiner also rejected Claims 1-21 under 35 USC 103.

With this Amendment, the applicant has amended a typographical error in Claim 3 which changes the dependency of Claim 3 from Claim 1 to Claim 2. No issues of patentability were involved with this Amendment of Claim 3. The Examiner is therefore respectfully requested to reconsider the objection to Claim 3.

In the present application, Claims 1, 8, 10 and 21 are independent claims. Independent Claim 1 is directed to a self-contained, combined, gas and smoke detector having a gas sensor, a smoke sensor, and programmed control element. The programmed control element is coupled to both of the sensors. A housing defines an internal region for receiving the sensors and the control element in the housing is perforated with a first opening shaped as a fire. A removable protective element is provided and covers at least part of the gas sensor within the housing. The element is applied during manufacture and is removed once the detector has been placed in to service.

Claim 8 is directed to an apparatus having a gas sensor, a smoke sensor, and control circuitry. The control circuitry includes a programmed processor, which is coupled to the sensors. The control circuitry determines if a predetermined gas condition has been sensed. The control circuitry also determines if a predetermined smoke condition has been sensed. The processor stores at least first and second nonverbal alarm specifying horn patterns. An alarm is energized to produce the first pattern when the gas condition is present, and to produce the second pattern when the predetermined smoke condition is present.

Claim 10 is directed to an ambient condition detector having an ambient condition sensor coupled to a control circuit. The control circuit includes a processor programmed with executable instructions and at least two prestored, different alarms specifying, non-verbal output patterns, both associated with the same sense ambient condition. Some of the instructions, in response to the sensed alarm condition, select one of the two prestored alarm specifying patterns for output.

Independent claim 21 is directed to a detector having housing which defines an internal region. A user non-replaceable biometric type gas sensor is carried in the region wherein during manufacture, the gas sensor is sealed with a user removable ceiling tape, which is located at least in part in the internal region. Fire sensors are also carried in the region. A programmed processor is carried in the region and is coupled to the sensors. Instructions executable by the processor are provided for automatically and periodically testing the sensors.

The claimed invention is direction to a control circuitry 100 of the detector 50 that includes a processing unit 102 (See page 8 of the specification, lines 10-11). Also provided is electronic measurement circuitry 110, that preferably includes carbon monoxide detection circuitry 112, smoke detection circuitry 114, and smoke calibration circuitry 116 (See Page 9 of the specification, Lines 10-12).

It is to be understood that the processing unit 102 controls both the carbon monoxide detection circuitry 112 and the smoke detection circuitry 114. For example, on Page 10, beginning at line 27, it explains that the processing unit 102 supplies a constant bias voltage level to the photo diode of a sensor S1. Also on page 11, beginning at line 17, discrete sampling time values of the sensor S1 are measured over time by the processor 102.

Also, with regards to the smoke detection circuitry 114, it is explained on page 13 of the

specification beginning at line 14, that pins, 14 and 16 of the smoke comparator unit U2 are connected together internally to a voltage follower of a non-inverting input of the smoke comparator unit U2 to provide an active guard output. Also on power up, the processor unit 102 verifies proper operation of the smoke detector.

When either of the gas sensor or smoke detector sensor identifies carbon monoxide or smoke, for example, the processing unit 102 triggers an alarm. For example on Page 11 of the specification beginning at line 24, it is explained that the sample time rate of change is monitored by the processing unit 102 and its magnitude is used to trigger an alarm condition when the carbon monoxide levels present a hazardous condition. Also the analog-to-digital converter operation of the carbon monoxide detection circuitry 112 is verified by the processing unit 102 upon power up and about every 10 minutes thereafter. Furthermore, when smoke is detected the processing unit 102 also turns on a smoke horn as explained in the specification on Page 13 beginning at line 24. The above-identified elements are depicted in Figure 2 of the drawings of the present application.

In the Office Action, the Examiner rejected Claims 1-3 under 35 U.S.C. 103 as being unpatentable over Goldstein (U.S. Patent No. 5,793,295) in view of Alexander (U.S. Patent No. 4,647,914) and further, in view of Locker (U.S. Patent No. 4,327,575). The Examiner stated that Goldstein discloses a self-contained combined gas and smoke detector having gas and smoke sensors, and a control element coupled to both sensors. The Examiner then goes on to cite Goldstein as disclosing the housing structure. The Examiner cites Alexander as using a universal symbol in the form of fire. Locker is cited by the Examiner for the use of a planner cover to prevent atmosphere from entering the test chamber before use thereof. The Examiner then concludes that it would have been obvious to one skilled in the art, that the protective covers,

applied during manufacture of the sensor, would be removed when the smoke detectors put in use and that the opening in shape of fire would be obvious.

As clearly set forth in the specification, the programmed control element of independent claim 1 is coupled to both the gas sensor and the smoke sensor. The programmed control element is not only utilized for activating the alarms upon sensing of gas and/or smoke, but also for controlling the electronic circuitry associated with the sensors.

U.S. Patent No. 5,793,295 issued to Goldstein is directed to a detection apparatus. As explained in column 6, in reference to Figure 9 of the drawing, Goldstein teaches that gas is detected using elements 110, 112, 116, 118 and 120. The smoke is detected using elements 110, 112, 114, 122 and 124. Although in column 6, lines 24-65, Goldstein explains operation of the gas sensor and the smoke detector, Goldstein does not suggest nor disclose the programmed control elements as set forth and claimed in the present application. Since neither of the references of Alexander or Lock disclose such a programmed control element, which not only activate alarms but also controls the sensors, no combination of these references would result in the invention set forth in independent claim 1.

Independent claim 2 is dependent upon independent claim 1 and is directed to a light emitting element positioned adjacent to the first opening where in the light emitting element is energized in the presence of smoke thereby illuminating the fire shape opening.

Independent claim 3 is dependent upon independent claim 2 and is directed to a housing perforated with a second opening and a first opening including the second light admitting element position adjacent thereto. The second light emitting element is energized in response to the presence of gas thereby illuminating the second opening.

However, as the dependent claims include all the limitations of independent claim 1 upon

which they depend. Therefore, since they also include the programmed control element coupled to both of the gas and smoke sensors, no combination of the cited prior art would result in the inventive concept as disclosed in either of dependent claims 2 and 3.

The Examiner rejected claims 4 and 5 under 35 U.S. C. 103 as being unpatentable over Goldstein in view of Alexander, Locker and further in view of Wallace. The Examiner cited Wallace only for disclosing a multiplanner sided housing for a combined smoke and gas detector, wherein the perimeter of the housing is formed of intersecting planner sides, at least some sides intersecting at angles in excess of 90 degrees. The Examiner stated that the combination of Wallace and the other 3 references would result in the claimed subject matter of dependent claims 4 and 5. However, since dependent claims 4 and 5 include all the limitations of independent claim 1, they are not anticipated by any combination of the cited prior art for the reasons set forth above with regard to the programmed control element.

The Examiner rejected claim 6 under 35 U.S. C. 103 as being unpatentable over Goldstein in view of Alexander and Locker and further in view of Buck, et al. The Examiner acknowledges that Goldstein fails to disclose different fire alarm patterns, as cited in the Buck, et al. reference as providing different patterns of alarms. However, claim 6 is dependent upon independent claim 1 and since it includes all of the limitations of independent claim 1 including the programmed control element, it is therefore not unpatentable over any combination of the prior art for the reason set forth above.

The Examiner also rejected claims 7, 14 and 20 under 35 U.S.C. 103 as being unpatentable over Goldstein in view of Alexander and Locker and further in view of Huey, Jr. et al. The Examiner cited Huey, Jr. et al as disclosing an element SPU for automatic periodic self-testing capability to ensure proper operation of a sensor. Although the SPU does check the

condition of sensor, it does not control operation of the sensor as disclosed and claimed in the present application. For example, on page 10, beginning at line 15 is explaining that the photo diode senor S1, the capacitor C5, the resistor R16 and the processing unit 102 comprise a psuedo analog-to-digital converter capable of measuring the absorbency of the sensor S1 with precision. The processing unit 102 receives and processes data on pin 9 supplied by the analog-to digital conversion to determine the level of carbon monoxide present the surrounding atmosphere.

Therefore, the rejection claim of 7 (and correspondingly claims 14 and 20, as explained below) under 35 U.S.C. 103 is not proper in view of the cited the prior art taken in any combination.

Independent claim 8 and dependent claims 10-13 and 15-17 are rejected by the Examiner under 35 U.S.C. 103 as being unpatentable over Buck et al in view of Gofzyk. The Examiner states that Buck discloses a self-contained gas smoke detector having a gas and smoke sensor, and a control element coupled to both sensors. The Examiner has cited Gofzyk as providing a different alarm for a different situation. However, independent claim 8 has, as a claimed element, control circuitry with a programmed processor coupled to the sensors. The control circuitry determines when a gas condition has been sensed. The control circuitry also determines when a smoke condition has been sensed. The processor stores at least first and second nonverbal alarms specifying horn patterns. As explained previously, the programmed processor does not just respond to the gas and smoke sensors, but rather provides control and is part of the sensing of gas and smoke. Thus no combination of the cited prior art anticipates the claim inventions set forth in independent claim 8.

Independent claim 10 similarly discloses the control circuit coupled to the sensor which include a processor programmed as for at least 2 prestored different alarms specifying, nonverbal

output patterns. For the same reasons as set forth above, the processor is not anticipated nor disclosed by the side of prior art of Buck et al., in view of Gozsyk. Furthermore, the dependent claims 12-13 and 15-17 include all of the limitations of the independent claims upon which they depend, and therefore also would not be anticipated by any combination of the side of prior art since each of these dependent claims include the element of a programmed processor.

Similarly, the Examiner rejected dependent claims 18-19 under 35 U.S.C. 103 as being unpatentable over Buck et al., in view of Goszyk and in view of Locker. For the reasons set forth above and since these dependent claims include a claim limitation of the independent claim of the programmed processor, no combination of the cited prior art would result in the claimed invention.

The Examiner rejected claim 20 under 25 U.S.C. 103 as being unpatentable over Buck et al., in view of Goszyk and in view of Locker. For the same reasons that are set forth above, this dependent claim, which includes all of the limitations of the independent claim on which it depends, therefore includes the programmable processor, and would not be unpatentable over any combination of the cited prior art taken either single or in combination.

The Examiner rejected independent claim 21 as being unpatentable over Buck et al., in view of Huey, Jr. et al., and further in view of Marnie. Marnie has been cited by the Examiner as disclosing a biometric gas sensor. However, independent claim 21 of the present application includes a programmed processor that is coupled to the fire sensor and to the gas sensor. As explained in the specification, the programmed processor is used not only for activating alarms, but also for controlling and sensing the gases and smoke. Thus no combination of the cited prior art taken either single or in combination could render independent claim 21 unpatentable.

With the amendment to the claims, and for the reasons set forth above, applicant believes

that the objection to claim 3 and the rejections of claims 1-21 under 35 U.S.C. 103 have been overcome. The Examiner is therefore respectfully request to reconsider the objection to claim 3 and the rejection of claims 1-21 under 35 U.S.C. 103.

The prior art made a record and not relied upon is considered to be general interest only. This application is believed to be in condition for allowance and such action at an early date is earnestly solicited.

Respectfully submitted,

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